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STUDY TO DEVELOP IMPROVED SPACECRAFT SNOW SURVEY METHODS USING SKYLAB/EREP DATA

(EREP Investigation No. 420)

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Seventh Quarterly Progress Report
Covering the Period 15 September to 15 December 1974

Contract No. NAS 9-13305

Prepared for:

Principal Investigations Management Office
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77958

Technical Monitor: Larry B. York Code TF6

Purpose of Investigation

The purpose of this investigation is to compare and evaluate Skylab data for mapping of snow cover. Visual interpretation of the S190 photographs will be performed to map areas that are snow-covered. The S192 imagery and digital printouts, S193 data, and S194 data will then be compared to the S190 photographs to determine how much additional information on areal extent of snow can be obtained from various spectral bands, thermal data, and microwave data. Snow-depth and area measurements taken routinely by various Government agencies in the Sierra Nevada, Cascades, and Great Plains shall provide ground truth. The relatively high-resolution EREP data will be compared with television and radiometric measurements from other satellites, and available aircraft imagery, to determine the optimum feature system for mapping the areal extent of snow. The results of this investigation will enable a more accurate assessment of the extent of snow cover in the United States and aid in prediction of runoff and better management of the country's water resources.

Accomplishments During Reporting Period

During this reporting period additional Skylab/EREP data were received. The data include the following:

S191

Data Books:	DPAR	315-1-3-42-3 R4
	"	315-1-all-42-20
	"	315-1-3-42-3 S
Technical Notes:	DPAR	315-1-3-41-1 R4
		315-1-3-42-3 R4
Magnetic Tapes:	DPAR	315-1-3-41-1 R4 (2 Tapes)

S192

Magnetic Tapes:	DPAR	298-1-89-51-3 (5 Tapes)
	"	51-2-5-51-3 (1 Tape)
film:	DPAR	298-1-89-55-1

S193A

Data Books:	DPAR	310-1-3-63-D R5
	"	310-1-3-62-C R5
Magnetic Tapes:	DPAR	310-1-3-61-1 R5
	"	252-1-8-61-1 R5

No further data analysis was performed during this reporting period, pending receipt of the data. Most of the above data were received late in the period.

The extension to continue the contract to 31 May 1975, with additional funding, was received on 18 November.

Travel Summary

No travel occurred during this period.

Plans for the Next Reporting Period

The data received during the past reporting period, together with the S194 data books and tapes received earlier, provide a substantial portion of the total data sample needed to complete the study. Therefore, it will now be possible to undertake further data analysis, and it is anticipated that a large effort will be devoted to the investigation during the next reporting period.

Considerable attention will be given to further investigation of the variations in the reflectance of snow in the different S192 spectral bands. The decreased snow reflectance in the near-infrared spectral bands, which has been observed qualitatively in the S192 film products, is believed to be a very significant result of the study; it will now be possible to use the digitized tapes to investigate these variations in quantitative terms.

Summary Outlook

We believe that the data collected during the latter part of the SL-4 mission, together with that from the earlier SL-2 mission, will form a total

sample sufficient to enable the objectives of the study to be met successfully. It is essential, however, that all data products that have been requested be provided by JSC, so that a meaningful data sample can be processed and analyzed.

Financial Report

In accordance with Appendix A of the Work Statement of the subject contract, the Financial Management Report is being submitted as a separate document.

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Discussion of Significant Results

No significant results were found during this reporting period.